

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:
Please cancel claims 2-47, 55, 56, 58, 59, 61, 68, 73, 74 and 77-79.

Listing of Claims:

1. (original) An apparatus for applying at least one electrical contact to a semiconductor substrate, comprising:

at least first and second rotatable applicator rolls, said first rotatable applicator roll being rotatable about a first axis, said first rotatable applicator roll comprising a first roll printing surface, said first roll printing surface comprising at least one raised first pattern surface, each said raised first pattern surface being positioned such that upon rotation of said first rotatable applicator roll about said first axis, each said raised first pattern surface passes through a first printing space, whereby a first semiconductor substrate surface of a semiconductor substrate passing through said first printing space while said at least one raised first pattern surface is covered with a first conductive ink and said first rotatable applicator roll is being rotated will come into contact with said first conductive ink on at least a part of said raised first pattern surface, and will not come into contact with first conductive ink on substantially any of said first roll printing surface other than said raised first pattern surface, such that a first conductive ink pattern will be deposited on said first semiconductor substrate surface; and

at least a first conveyor which is operable to convey a semiconductor substrate to said second rotatable applicator roll after said semiconductor substrate passes through said first printing space,

said second rotatable applicator roll being rotatable about a second axis, said second rotatable applicator roll comprising a second roll printing surface, said second roll printing surface comprising at least one raised second pattern surface, each said raised second pattern surface being positioned such that upon rotation of said second rotatable applicator roll, each said raised second pattern surface passes through a second printing space, whereby said first semiconductor substrate surface of said semiconductor substrate passing through said second printing space while said raised second pattern surface is covered with a second conductive ink and second rotatable applicator roll is being rotated about said second axis will come into contact with said second conductive ink on at least part of said raised second pattern surface, and will

not come into contact with second conductive ink on substantially any of said second roll printing surface other than said raised second pattern surface, such that a second conductive ink pattern will be deposited on said first semiconductor substrate surface.

Claims 2-47: (canceled)

48. (original) A method for applying at least one electrical contact to a semiconductor substrate, comprising:

passing a semiconductor substrate through a first printing space;

rotating about a first axis a first applicator roll having a first roll printing surface which comprises at least one raised first pattern surface, such that each said raised first pattern surface passes through a first ink space containing a first conductive ink and through said first printing space, whereby said first conductive ink is passed from each said raised first pattern surface onto a first semiconductor substrate surface of said semiconductor substrate to deposit a first conductive ink pattern on said first semiconductor substrate surface;

conveying said semiconductor substrate from said first printing space to a second printing space;

passing said semiconductor substrate through said second printing space; and

rotating about a second axis a second applicator roll having a second roll printing surface which comprises at least one raised second pattern surface, such that each said raised second pattern surface passes through a second ink space containing a second conductive ink and through said second printing space, whereby said second conductive ink is passed from each said raised second pattern surface onto said first semiconductor substrate surface of said semiconductor substrate to deposit a second conductive ink pattern on said first semiconductor substrate surface.

49. (original) A method as recited in claim 48, wherein at least one region of said first conductive ink pattern and at least one region of said second conductive ink pattern overlap by less than 1 cm.

50. (original) A method as recited in claim 49, wherein said first conductive ink pattern and said second conductive ink pattern together cover substantially an entirety of said first semiconductor substrate surface, except for a border region around an edge of said first semiconductor substrate surface.

51. (original) A method as recited in claim 49, wherein said first conductive ink pattern and said second conductive ink pattern together cover substantially an entirety of said first semiconductor substrate surface.

52. (original) A method as recited in claim 48, further comprising:

rotating about a third axis a first tank roll having a first tank roll collection surface which passes through a first collection space positioned within a first conductive ink positioned within a first tank, and passes through said first ink space, whereby said first conductive ink is passed from said first tank to said first tank roll collection surface in said first collection space, and is passed from said first tank roll collection surface to said at least one raised first pattern surface in said first ink space; and

rotating about a fourth axis a second tank roll having a second tank roll collection surface which passes through a second collection space positioned within a second conductive ink positioned within a second tank, and passes through said second ink space, whereby said second conductive ink is passed from said second tank to said second tank roll collection surface in said second collection space, and is passed from said second tank roll collection surface to said at least one raised second pattern surface in said second ink space.

53. (original) A method as recited in claim 48, further comprising:

rotating a first feed roll about a third axis, said first printing space being defined between said first applicator roll and said first feed roll; and

rotating a second feed roll about a fourth axis, said second printing space being defined between said second applicator roll and said second feed roll.

54. (original) A method as recited in claim 48, further comprising drying said semiconductor substrate after said passing said semiconductor substrate through said first printing space and before said passing said semiconductor substrate through said second printing space.

55. (canceled)

56. (canceled)

57. (currently amended) A method as recited in claim ~~56~~54, further comprising providing a second surface contact on a second semiconductor substrate surface of said semiconductor substrate.

58. (canceled)

59. (canceled)

60. (original) A method as recited in claim 48, further comprising providing a second surface contact on a second semiconductor substrate surface of said semiconductor substrate.

61. (canceled)

62. (original) A method as recited in claim 48, wherein said first conductive ink comprises from about 20 weight % to about 35 weight % of a solvent, about 2 weight % of a binder, from about 2 weight % to about 4 weight % aluminum, and the remainder silver.

63. (original) A method as recited in claim 48, wherein said first conductive ink comprises a hot melt ink.

64. (original) A method as recited in claim 63, wherein said first conductive ink comprises hexadecanol and silver.

65. (original) A method as recited in claim 48, wherein said second conductive ink comprises from about 20 weight % to about 35 weight % of a solvent, about 2 weight % of a binder, and the remainder aluminum.

66. (original) A method as recited in claim 48, wherein said second conductive ink comprises a hot melt ink.

67. (original) A method as recited in claim 66, wherein said second conductive ink comprises hexadecanol and aluminum.

68. (canceled)

69. (original) A method as recited in claim 48, wherein said semiconductor substrate comprises polycrystalline silicon.

70. (original) A method as recited in claim 48, wherein said semiconductor substrate comprises single crystal silicon.

71. (original) A method for applying at least one electrical contact to a semiconductor substrate, comprising:

passing a semiconductor substrate through a first printing space; and

rotating about a first axis a first applicator roll having a first roll printing surface which comprises at least one raised first pattern surface, such that each said raised first pattern surface passes through a first ink space containing a first conductive ink comprising a hot melt ink, and through said first printing space, whereby said first conductive ink is passed from at least one said raised first pattern surface onto a first semiconductor substrate surface of said semiconductor substrate to deposit a first conductive ink pattern on said first semiconductor substrate surface.

72. (original) A method as recited in claim 71, wherein said first conductive ink comprises hexadecanol and silver.

73. (canceled)

74. (canceled)

75. (original) A method as recited in claim 71, further comprising providing a second surface contact on a second semiconductor substrate surface of said semiconductor substrate.

76. (currently amended) A method as recited in claim ~~73~~71, further comprising firing |
said semiconductor substrate after said providing said second surface contact.

Claims 77-79: (canceled)